REMARKS

Reexamination and reconsideration of this application as amended is requested. By this amendment, Claims 1 and 9 have been amended and Claims 4-5 and 15-16 have been cancelled. After this amendment, Claims 1-3 and 6-13 remain in this application.

CLAIM OBJECTIONS

The Examiner objected to Claims 1-13 and 15-16 because of minor informalities. The Examiner suggested that the term "siliciding" be corrected to "silicide".

Applicants wish to thank the Examiner for the suggestion, and accordingly have amended Claim 1 to correct the minor informality by replacing the term "siliciding" with the term "silicide". The claim now reads correctly. This amendment was made to correct minor informality in the claim language and not to further limit the claims in view of any prior art or for patentability.

While not objected to by the Examiner, Claim 9 was amended to correctly recite antecedent basis for the term "a first annealing step". Also, amended dependent Claim 9 now depends directly from independent Claim 1. No new matter was added.

Accordingly, in view of the amendments and the remarks above, Applicants believe that the objection has been overcome, and kindly request that the Examiner withdraw the objection.

CLAIM REJECTIONS – 35 USC § 102

The Examiner rejected Claims 1-2, 5-8, 10 and 15-16, under 35 U.S.C. § 102(b) as being anticipated by Lim et al (U.S. Patent No. 6,271,133).

The Examiner rejected Claims 1-2, 5-6, 8, 10, and 15-16, under 35 U.S.C. § 102(b) as being anticipated by Sitaram et al (U.S. Patent No. 5,352,631).

In these rejections, the Examiner cites 35 U.S.C. § 102(b), and a proper rejection requires that a single reference teach (i.e., identically describe) each and every element of the rejected claims as being anticipated by Lim with respect to Claims 1-2, 5-8, 10 and 15-16, and as being anticipated by Sitaram with respect to 1-2, 5-6, 8, 10, and 15-16.[1]

Applicants have amended Claim 1, and have canceled Claims 5 and 15-16 without prejudice. Claim 1, first of all, was amended to correct a minor formality in the use of the term "silicide" instead of "siliciding", and not to limit the claims in view of any prior art or for patentability. Further, Claim 1 was amended to incorporate the features that were previously recited for dependent Claim 4 now canceled. Specifically, amended Claim 1 now recites that **"the first metal and the second metal are identical"**. No new matter was added.

Discussion of Lim

Lim discloses a method to form different silicide layers over the top of the gate electrode and the surface of the source/drain regions. In particular, Lim discloses (see figures 4-8) a method for forming a $TiSi_2$ layer (31) over the surface of the source/drain regions (24/26) comprising an annealing process of a titanium layer (3), while no $TiSi_2$ forms over the gate due to the presence of a TiN cap layer (20). The cap layer (20) is then removed. A layer of Co (34) is deposited over the gate (18) and reacts by annealing with the gate (18) and creates a layer of Co Si_2 at the interface between the Co and the

[1] See MPEP §2131 (Emphasis Added) "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim."

poly (see column 6, lines 61-64). No reaction occurs between the deposited layer of Co and the $TiSi_2$ of layer 31.

Lim does not disclose or anticipate any other metal except titanium and cobalt: the silicided metals of source/drain regions and of the gate are then different. Moreover, Lim does not disclose the use of an annealing process during a sufficient time to **completely** silicide the gate region and even mentions that the layer of $CoSi_2$ is formed only at the top surface of the gate (see column 7, lines 7-8).

Discussion of Sitaram

Sitaram discloses a method for forming a transistor comprising silicided drain and source regions and a silicided gate. In particular, Sitaram discloses (see figures 2-5) a method for forming a cobalt silicide $CoSi_2$ (26) within drain and source regions, while the gate (18) is protected from being silicided by masking layer (20). Then the drain and source electrodes (32) are formed by an ion implant step and the masking layer (20) is removed. A layer comprising titanium (28) is formed overlying the gate (18) and a heating cycle is used to react the metal layer (28) with the gate to form a silicided region (30) of $TiSi_2$ over the gate (18) (see column 5, lines 46-54). Silicided metals of source/drain regions and of the gate are different. Moreover, Sitaram does not disclose the use of a heating cycle during a sufficient time to **completely** silicide the gate region: the layer of $TiSi_2$ (30) is formed over the gate (see column 5, lines 51 and figures 5,6).

Discussion of Tavel

Tavel discloses a method for forming a transistor with a totally silicided gate. In particular, Tavel discloses two processes of total gate silicidation: one without any CMP step an done with a CMP step.

The first process (figure 1) relates to a transistor having source/drain regions and a gate in cobalt silicide $CoSi_2$. However, the transistor has deep silicide junctions, which are a limitation. In the secpnd process (figure 2), the transistor has a totally silicided gate but source/drain and gate silicidation are dissociated.

Tavel discloses a method for forming a transistor with a totally silicided gate, and wherein the silicided metals of source/drain regions and of the gate are the same, but does not disclose the presently claimed process.

As discussed above, it should be clear that neither Lim, Sitaram, or even Tavel, teach or anticipate the presently claimed invention as recited for Claims 1-2, 6-8, and 10. Applicants respectfully submit that amended independent Claim 1, and dependent Claims 2, 6-8, and 10, which depend from Claim 1, all recite new and novel features of the presently claimed invention. In view of the amendment and remarks above, Applicants believe that the rejection of Claims 1-2, 5-8, 10 and 15-16, under 35 U.S.C. § 102(b) has been overcome. Applicants request that Examiner withdraw the rejection of these claims.

CLAIM REJECTIONS – 35 USC § 103

The Examiner rejected Claims 3-4, 9, and 11-13, under 35 U.S.C. § 103(a) as being unpatentable over Lim et al (U.S. Patent No. 6,271,133), as applied to Claims 1-2, 5-8, 10 and 15-16, and further in view of Tavel et al. (Totally Silicided CoSi2 Polysilicon, IEEE pgs 37.5.1-4), hereinafter "Tavel".

The Examiner rejected Claims 3-4 and 11-13, under 35 U.S.C. § 103(a) as being unpatentable over Sitaram et al (U.S. Patent No. 5,352,631), as applied to Claims 1-2, 5-8, 10 and 15-16, and further in view of Tavel et al. (Totally Silicided CoSi2 Polysilicon, IEEE pgs 37.5.1-4), hereinafter "Tavel".

The Examiner cites 35 U.S.C. §103. The Statute expressly requires that obviousness or non-obviousness be determined for the claimed subject matter "**as a whole**," and the key to proper determination of the differences between the prior art and the present invention is giving full recognition to the invention "as a whole."

First of all, Applicants refer the Examiner to the discussion above with respect to the teachings of Lim, Sitaram, and Tavel, which discussion will not be repeated here.

In view of the teachings of the cited references, as discussed above, a person of ordinary skill in the art is not inclined by Lim, Sitaram, or any combination thereof, to form a transistor having drain/source regions and gate with the same silicided metal. It is all the less obvious since the aim of both Lim and Sitaram is to disclose a method for forming a transistor having drain/source regions and a gate in **different** silicided metals. It is confirmed in Sitaram (see column 5, line 46 to column 6, line 14) and in Lim (see column 7, lines 6-50). Both Lim and Sitaram advise against a transistor having the same silicided metal for both drain/source regions and the gate.

Therefore, it should be clear from the discussion above, that even if a person of ordinary skill in the art wanted to combine Lim and Tavel, or Sitaram and Tavel, the result would be a totally silicided gate transistor but with a **different** silicided metal for source/drain regions and the gate.

Moreover, if a person of ordinary skill in the art knew Tavel, such artisan would have no reason to look at Sitaram or Lim since, firstly, the aim of these documents is to disclose a method for forming a transistor having drain/source regions and a gate in **different** silicided metals, and secondly, Tavel already discloses two methods for forming a transistor with a totally silicided gate and with the same silicided metal for both source/drain regions and the gate.

In both cases discussed above, a person of ordinary skill in the art is not inclined to combine these documents since such artisan is not inclined to use Sitaram or Lim, and, even if arguendo he combined them, he would get a transistor with **different** silicided metals for source/drain regions and the gate, which is different than the presently claimed invention.

A person of ordinary skill in the art is all the less inclined to use Sitaram and Lim to form a transistor with the same silicided metal for source/drain regions and the gate, since he would have to **separately** form the silicided gate and the silicided source/drain regions whereas it is the **same** silicided metal. It is not at all obvious, and it is confirmed by the two processes of Tavel which both comprise at least one common step of formation of the gate and of the source/drain regions.

In view of the amendment and the remarks above, Applicants respectfully submit that neither Lim, Sitaram, Tavel, nor any combination thereof, teaches or suggests the presently claimed invention as recited for amended independent Claim 1, and for all dependent claims depending therefrom, respectively. Accordingly, in view of the amendment and the discussion above, Applicants believe that the rejection of Claims 3-4, 9, and 11-13, under 35 USC § 103(a) has been overcome. Applicants kindly request that Examiner withdraw the rejection of these claims. Applicants further request that the Examiner allow these claims to issue in a patent.

Conclusion

The foregoing is submitted as full and complete response to the Official Action mailed December 30, 2005, and it is submitted that Claims 1-3 and 6-13 are in condition for allowance. Reconsideration of the rejection is requested. Allowance of Claims 1-3 and 6-13 is earnestly solicited.

No amendment made was related to the statutory requirements of patentability unless expressly stated herein. No amendment made was for the purpose of narrowing the scope of any claim, unless Applicants have argued herein that such amendment was made to distinguish over a particular reference or combination of references.

Applicants acknowledge the continuing duty of candor and good faith to disclose information known to be material to the examination of this application. In accordance with 37 CFR § 1.56, all such information is dutifully made of record. The foreseeable equivalents of any territory surrendered by amendment are limited to the territory taught by the information of record. No other territory afforded by the doctrine of equivalents is knowingly surrendered and everything else is unforeseeable at the time of this amendment by the Applicants and the attorneys.

The present application, after entry of this amendment, comprises eleven (11) claims, including one (1) independent claim. Applicants have previously paid for twenty (20) claims including three (3) independent claims. Applicants, therefore, believe that no additional fee for claims amendment is currently due.

However, a petition for extension of time to file this Response has been attached. The Commissioner is authorized to charge the extension fee of **$120.00**, or if this fee amount is insufficient or incorrect, then the Commissioner is authorized to charge the appropriate fee amount to prevent this application from becoming abandoned, to Deposit Account **50-1556**.

If the Examiner believes that there are any informalities that can be corrected by Examiner's amendment, or that in any way it would help expedite the prosecution of the patent application, a telephone call to the undersigned at (561) 989-9811 is respectfully solicited.

The Commissioner is hereby authorized to charge any fees that may be required or credit any overpayment to Deposit Account **50-1556**.

In view of the preceding discussion, it is submitted that the claims are in condition for allowance. Reconsideration and re-examination is requested.

Respectfully submitted,

Date: May 1, 2006

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